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Japanese Published Unexamined Patent Application (A) No. 09-087901, published March 31, 1997; Application Filing No. 07-249130, filed September 27, 1995; Inventor(s): Hisashi Fujiwara et al.; Assignee: Unichika Corporation; Japanese Title: Stockings

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STOCKINGS

CLAIM(S)

Stockings made of synthetic resin containing substances having a solar energy-storing thermal effect.

DETAILED DESCRIPTION OF THE INVENTION

(0001)

(Technical Field of Application)

The present invention pertains to stockings with a high thermal effect that is made of solar heat-storing fiber containing thermal material, which absorbs and converts the solar energy into heat.

(0002)

(Prior Art)

In the past, to raise a thermal effect of stockings, thick yarns were used or density of the yarn was increased. Or a double-knit structure or a double-layer structure was generally practiced. Both structures aim at a thermal effect by using a thick knit material to enhance insulation. Also, there are some inventions,

wherein stockings that are made of fine ceramic material having a far-infrared generation effect is used to produce a thermal effect.

(0003)

With the former method of using a thicker material, it may indeed produce a high thermal effect, but there is a crucial problem of lack in fashionability when the thicker material is used for stockings that are required to make legs look beautiful, e.g., panty stockings for ladies and thin long stockings. With the method of using an infrared generation material, it is disclosed in Japanese Published Unexamined Utility Patent Applications 02-090606 and 02010240, but the method is used only for the hip section. Therefore, with this method wherein a thin material is used only for the hip section, it is not possible to raise a thermal effect in leg section where the user feels it cold.

(0004)

(Problems of the Prior Art to Be Addressed)

At present, it is impossible to find a method to raise a thermal effect to a sufficient level for thin panty stockings and thin long stockings that require to make legs look beautiful. The inventors of the present invention studied assiduously on a method to solve these problems and produced the present invention. By using the solar energy storing fiber for stockings and a mechanism for converting the solar energy into heat, the generated heat can be positively

preserved. By so doing, stockings having a high thermal effect and high fashionability can be presented.

(0005)

(Means to Solve the Problems)

In the present invention, in place of generally used nylon or polyester fiber, the solar energy-storing thermal fiber is used to accomplish the aforementioned objective. More specifically, the present invention attempts to present "stockings made of synthetic fiber containing substances having a solar energy-storing thermal effect".

(0006)

(Embodiment)

The present invention is further explained in detail below. The solar energy-storing thermal fiber used in the present invention is prepared by mixing in synthetic fiber a substance that absorbs and converts the visible light of the solar energy into heat, and its representative one is zirconium carbide. Also, carbon has the same effect. Other than these, metal oxides, such as zirconium oxide, cobalt oxide, and titanium oxide, have the same effect. These heat-storing substances are mixed in nylon, polyester, acrylic synthetic fibers to make the heat-storing thermal fiber. As to the mixing method, there is a method of evenly mixing them in composite yarn polymers, such as nylon, polyester, and acryl. Or there is a method

of forming a core - sheath structure by them, and a method of coating on the surface.

(0007)

Fig. 1 shows the panty stocking of the present invention. It will be ideal to use the solar energy-storing thermal fiber for all the sections, 1, 2, 3, in the figure, but if it is necessary to take the cost factor and property into account, the fiber can be used only for 2 sections which are exposed to the sunlight and a sufficient effect will still be produced. Fig. 2 indicates the long stocking, for which the fiber may be used for the sections, 1, 2, or only for the section 1.

(0008)

The heat-storing fiber containing zirconium carbide and carbon absorbs the near-infrared of the sunlight, converts it into heat, preserves the heat, and has an effect of kicking back the far-infrared ray generated from a human body; thereby producing a double thermal effects. As for the metal oxides, if a fine ceramic material having a far-infrared reflection function is used in combination, the same effect will be produced.

(0009)

(Operation)

By using the solar energy-storing thermal fiber for stockings, the stockings will absorb the visible light of the solar energy, which generates heat by energy conversion, so the thermal effect can be produced.

(0010)

(Advantage)

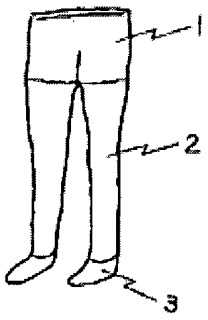
Use of solar energy-storing thermal fiber for thin stockings requiring fashionability has never been implemented by the prior art thermal stockings. But the present invention can be effectively used for the stockings having fashionability, such as that for making legs look beautiful, for cold winter season.

(Advantage)

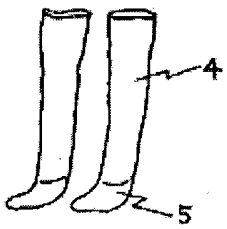
Fig. 1 shows an oblique view of the panty stocking of the present invention. Fig. 2 shows an oblique view of the stocking of the present invention.

1. hip section
2. leg section
3. feet section
4. leg section

【図1】



【図2】



Translations
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